

What is claimed is:

Claim 1. An accommodating intraocular lens for implanting in an individual's eye, which comprises:

- 5 a. a deformable elastic dynamic lens having a non-accommodating surface curvature;
- b. a lens-shaping member having flexible portions in contact with peripheral edge regions of said dynamic lens for enabling deformation of said lens
- 10 for changing said lens surface curvature;
- c. an elastically flexible member in contact with said lens-shaping member flexible portions; and
- d. first and second lens supporting members, said first lens supporting member having a proximal
- 15 end region engaging said flexible member, said second lens supporting member having a proximal end region connected to said lens shaping member, and a distal end region of at least said first lens supporting member being configured for engaging,
- 20 upon implanting the intraocular lens in an individual's eye, regions of said individual's eye that are responsive to contraction and relaxation of a ciliary muscle disposed in a ciliary body region of said individual's eye.

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Claim 2. The accommodating intraocular lens as claimed in Claim 1, wherein said first and second lens supporting members are configured so that their respective distal end regions are aligned with generally

30 opposite regions of said ciliary body when the intraocular lens is implanted in said individual's eye.

Claim 3. The accommodating intraocular lens as claimed in Claim 1, wherein each of said first and second

35 lens supporting members are relatively rigid as compared with said dynamic lens.

Claim 4. The accommodating intraocular lens as claimed in Claim 1, wherein said proximal end region of the second lens supporting member is rigidly connected to said lens-shaping member.

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Claim 5. The accommodating intraocular lens as claimed in Claim 1, wherein said lens-shaping member and said second lens supporting member are constructed in one piece.

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Claim 6. The accommodating intraocular lens as claimed in Claim 1, wherein said elastically flexible member is formed in a coil to encircle said flexible portions of the lens-shaping member.

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Claim 7. The accommodating intraocular lens as claimed in Claim 6, wherein said intraocular lens is implanted in an individual's capsular bag from which a natural lens has been removed and wherein the distal end regions of said first and second lens supporting members are configured for direct contact with said ciliary body.

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Claim 8. The accommodating intraocular lens as claimed in Claim 7, wherein said elastically flexible member and said flexible portion of the lens-shaping member each have a larger diameter unstressed condition and a smaller diameter stressed condition, and wherein said elastically flexible member and said flexible portion of the lens-shaping member are configured for elastically returning to said larger diameter, unstressed conditions, thereby enabling the outer diameter of said dynamic lens to elastically expand to its non-accommodating condition, in response to the reduction of said compressive force applied to distal ends of said first and second lens support members by said ciliary body when said ciliary muscle relaxes.

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Claim 9. The accommodating intraocular lens as claimed in Claim 7, wherein said elastically flexible member is constructed for tightening and squeezing said flexible portions of the lens-shaping member, thereby reducing the outer diameter of said dynamic lens by said lens-shaping member and increasing said surface curvature of said dynamic lens for achieving accommodation, in response to a compressive force applied to distal ends of said first and second lens support members by said ciliary body when said ciliary muscle contracts.

Claim 10. The accommodating intraocular lens as claimed in Claim 6, wherein said intraocular lens is implanted in an individual's capsular bag from which a natural lens has been removed and wherein the distal ends of said first and second lens supporting members are configured for attachment to the capsular bag adjacent to opposing ciliary body-connected zonules.

Claim 11. The accommodating intraocular lens as claimed in Claim 10, wherein said elastically flexible member is configured for being pulled to a larger diameter, stressed condition and said flexible portions of the said lens-shaping member is configured for elastically returning to a larger diameter, unstressed condition, thereby enabling the outer diameter of said dynamic lens to attain its unstressed, non-accommodating condition, in response to an increase in tension applied to distal end regions of said first and second lens supporting members by said zonules when said ciliary muscle relaxes.

Claim 12. The accommodating intraocular lens as claimed in Claim 10, wherein said elastically flexible member is constructed for elastically contracting from said larger diameter stressed condition to a smaller diameter unstressed condition, thereby squeezing said flexible portions of the lens-shaping member to a smaller diameter stressed condition and reducing the outer diame-

ter of said dynamic lens and increasing said surface curvature for achieving accommodation, in response to a release of tension applied to distal end regions of said first and second lens supporting members by said zonules
 5 when said ciliary muscle contracts.

Claim 13. The accommodating intraocular lens as claimed in Claim 6, wherein said intraocular lens is implanted in a an anterior chamber of an individual's eye,
 10 wherein the distal end region of said first lens supporting member is configured for direct contact with said ciliary body, and wherein said second lens supporting member is configured for attachment to an iris region of said eye.

15 Claim 14. The accommodating intraocular lens as claimed in Claim 13, wherein said elastically flexible member and said flexible portion of the lens-shaping member each have a larger diameter unstressed condition and a smaller diameter stressed condition, and wherein said
 20 elastically flexible member and said flexible portion of the lens-shaping member are configured for elastically returning to said larger diameter, unstressed conditions, thereby enabling the outer diameter of said dynamic lens
 25 to elastically expand to its non-accommodating condition, in response to the reduction of said compressive force applied to distal end region of said first lens supporting member by said ciliary body when said ciliary muscle relaxes.

30 Claim 15. The accommodating intraocular lens as claimed in Claim 13, wherein said elastically flexible member is constructed for tightening and squeezing said flexible portions of the lens-shaping member, thereby re-
 35 ducing the outer diameter of said dynamic lens by said lens-shaping member and increasing said surface curvature of said dynamic lens for achieving accommodation, in response to a compressive force applied to the distal end

region of said first lens supporting member by said ciliary body when said ciliary muscle contracts.

Claim 16. The accommodating intraocular lens as
5 claimed in Claim 1, wherein said compressible member is constructed from a shape memory metallic alloy.

Claim 17. The accommodating intraocular lens as
10 claimed in Claim 1, wherein said dynamic lens is formed from a silicone or acrylic material.

Claim 18. The accommodating intraocular lens as
15 claimed in Claim 1, wherein said lens shaping member and said first and second lens supporting members are formed from polymethyl methacrylate.

Claim 19. The accommodating intraocular lens as
20 claimed in Claim 1, wherein said second lens supporting member includes a static, non-accommodating lens having an optical axis aligned with an optical axis of said dynamic lens.

Claim 20. An accommodating intraocular lens for im-
planting in an individual's eye, which comprises:
25 a. a deformable elastic dynamic lens having a non-accommodating surface curvature;
b. a lens-shaping member having flexible portions in contact with peripheral edge regions of said dynamic lens for enabling deformation of said lens
30 for changing said lens surface curvature;
c. an elastically flexible member in contact with said lens-shaping member flexible portions, said elastically flexible member being formed in a coil to encircle said flexible portions of the
35 lens-shaping member; and
d. first and second lens supporting members, said first lens supporting member having a proximal end region engaging said flexible member, said

second lens supporting member having a proximal end region connected to said lens shaping member, distal end regions of said first and second lens supporting members being configured for direct contact, upon implanting the intraocular lens in an individual's capsular bag from which a natural lens has been removed individual's eye, with opposing ciliary body regions of said individual's eye, said ciliary body regions being responsive to contraction and relaxation of a ciliary muscle.

Claim 21. The accommodating intraocular lens as claimed in Claim 20, wherein said elastically flexible member and said flexible portion of the lens-shaping member each have a larger diameter unstressed condition and a smaller diameter stressed condition, and wherein said elastically flexible member and said flexible portion of the lens-shaping member are configured for elastically returning to said larger diameter, unstressed conditions, thereby enabling the outer diameter of said dynamic lens to elastically expand to its non-accommodating condition, in response to the reduction of said compressive force applied to distal ends of said first and second lens support members by said ciliary body when said ciliary muscle relaxes, and wherein said elastically flexible member is constructed for tightening and squeezing said flexible portions of the lens-shaping member, thereby reducing the outer diameter of said dynamic lens by said lens-shaping member and increasing said surface curvature of said dynamic lens for achieving accommodation, in response to a compressive force applied to distal ends of said first and second lens support members by said ciliary body when said ciliary muscle contracts.

Claim 22. The accommodating intraocular lens as claimed in Claim 20, wherein each of said first and sec-

ond lens supporting members are relatively rigid as compared with said dynamic lens.

Claim 23. An accommodating intraocular lens for im-
5 planting in an individual's eye, which comprises:

- a. a deformable elastic dynamic lens having a non-
accommodating surface curvature;
- b. a lens-shaping member having flexible portions in
10 contact with peripheral edge regions of said dynamic lens for enabling deformation of said lens for changing said lens surface curvature;
- c. an elastically flexible member in contact with
15 said lens-shaping member flexible portions, said elastically flexible member being formed in a coil to encircle said flexible portions of the lens-shaping member; and
- e. first and second lens supporting members, said
20 first lens supporting member having a proximal end region engaging said flexible member, said second lens supporting member having a proximal end region connected to said lens shaping member, distal end regions of said first and second lens supporting members being configured for attachment, when said intraocular lens is implanted in
25 an individual's capsular bag from which a natural lens has been removed, to the capsular bag adjacent opposing ciliary body-connected zonules.

Claim 24. The accommodating intraocular lens as
30 claimed in Claim 23, wherein said elastically flexible member is configured for being pulled to a larger diameter, stressed condition and said flexible portions of the said lens-shaping member is configured for elastically
35 returning to a larger diameter, unstressed condition, thereby enabling the outer diameter of said dynamic lens to attain its unstressed, non-accommodating condition, in response to an increase in tension applied to distal end regions of said first and second lens supporting members

by said zonules when said ciliary muscle relaxes, and wherein said elastically flexible member is constructed for elastically contracting from said larger diameter stressed condition to a smaller diameter unstressed condition, thereby squeezing said flexible portions of the lens-shaping member to a smaller diameter stressed condition and reducing the outer diameter of said dynamic lens and increasing said surface curvature for achieving accommodation, in response to a release of tension applied to distal end regions of said first and second lens supporting members by said zonules when said ciliary muscle contracts.

Claim 25. The accommodating intraocular lens as claimed in Claim 23, wherein each of said first and second lens supporting members are relatively rigid as compared with said dynamic lens, and wherein said second lens supporting member is rigidly connected to said lens-shaping member.

Claim 26. An accommodating intraocular lens for implanting in an individual's eye, which comprises:

- a. a deformable elastic dynamic lens having a non-accommodating surface curvature;
- b. a lens-shaping member having flexible portions in contact with peripheral edge regions of said dynamic lens for enabling deformation of said lens for changing said lens surface curvature;
- c. an elastically flexible member in contact with said lens-shaping member flexible portions, said elastically flexible member being formed in a coil to encircle said flexible portions of the lens-shaping member; and
- d. first and second lens supporting members, said first lens supporting member having a proximal end region engaging said flexible member, said second lens supporting member having a proximal end region connected to said lens shaping member,

distal end region of said first lens supporting member being configured for direct contact, when said intraocular lens is implanted in an anterior chamber of an individual's eye, with said ciliary body, and wherein said second lens supporting member is attached to an iris region of said eye.

Claim 27. The accommodating intraocular lens as claimed in Claim 26, wherein said elastically flexible member and said flexible portion of the lens-shaping member each have a larger diameter unstressed condition and a smaller diameter stressed condition, and wherein said elastically flexible member and said flexible portion of the lens-shaping member are configured for elastically returning to said larger diameter, unstressed conditions, thereby enabling the outer diameter of said dynamic lens to elastically expand to its non-accommodating condition, in response to the reduction of said compressive force applied to distal end region of said first lens supporting member by said ciliary body when said ciliary muscle relaxes, and wherein said elastically flexible member is constructed for tightening and squeezing said flexible portions of the lens-shaping member, thereby reducing the outer diameter of said dynamic lens by said lens-shaping member and increasing said surface curvature of said dynamic lens for achieving accommodation, in response to a compressive force applied to the distal end region of said first lens supporting member by said ciliary body when said ciliary muscle contracts.